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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/686,480

10/16/2003

Katsunori Nishimura

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05/18/2009

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EXAMINER

CHUO, TONY SHENG HSIANG

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

05/18/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/686,480	<b>Applicant(s)</b> NISHIMURA ET AL.	
	<b>Examiner</b> Tony Chuo	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3,5-8,11,12,17,18,20,21,23,29,32,33,40-43 and 46-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3,5-8,11,12,17,18,20,21,23,29,32,33,40-43 and 46-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 April 2009 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/17/09 has been entered.

### ***Response to Amendment***

2. Claims 3, 5-8, 11, 12, 17, 18, 20, 21, 23, 29, 32, 33, 40-43, and 46-48 are currently pending. Claims 1, 2, 4, 9, 10, 13-16, 19, 22, 24-28, 30, 31, 34-39, 44, and 45 are cancelled. New claims 47 and 48 have been added. The previous objection to claim 4 is withdrawn. The previous 112, 1<sup>st</sup> paragraph rejections of claims 8, 19, and 46 are withdrawn. The amended and new claims do overcome the previously stated 102 and 103 rejections. However, upon further consideration, claims 3, 5-8, 11, 12, 17, 18, 20, 21, 23, 29, 32, 33, 40-43, and 46-48 are rejected under the following 112, 102, and 103 rejections.

***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: in the replacement sheets for Figures 2 and 5, the reference numbers “50” & “210” are not described in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Objections***

4. Claims 47 and 48 are objected to because of the following informalities: the abbreviation “MEA” should be changed to “membrane electrode assembly”. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 3, 5-7, 11, 12, 17, 20, 23, 29, 32, 41, and 47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding independent claim 47, the limitation "a holder for holding peripheries of the water-retaining layer, water permeable layer, separator and unit cell, wherein the holder, which is partitioned from a gas flow channel with a wall member" is not supported by the original specification. Page 9 of the specification describes a holder 206 for holding the water retaining layer 203 and Figure 2 shows a holder 206 that holds the periphery of the water retaining layer 203. Therefore, the holder does not hold the peripheries of the water permeable layer, separator, and unit cell. In addition, the wall 50 & 210 shown in Figure 2 is construed as a separator having a gas channel 205 facing the water permeable layer 201 on one face and facing the unit cell on the other face so the holder 206 is not partitioned from a gas flow channel with a wall member.

7. Claims 8, 18, 21, 42, and 48 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains

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subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding independent claim 48, the limitations “a separator having a gas channel facing a water permeable layer on one face and facing the unit cell on the other face” and “a holder for holding peripheries of the water-retaining layer, water permeable layer, separator and unit cell, wherein the holder, which is partitioned from a gas flow channel with a wall member” is not supported by the original specification.

As previously stated in the 112, 1<sup>st</sup> paragraph rejection of the claims 8 and 46, the embodiment of a filter, water retaining layer, and water permeable layer is not supported by the original specification. Claim 48 is supported by the embodiment shown in Figure 5 which shows only a filter and water retaining layer. The specification states on page 25 that when the porous carbon filter is utilized, the water permeable layer is omitted because the porous carbon filter can control the flow rate of part of the cooling water from the cooling water flow channel to the water retaining layer. In addition, there are no other embodiments shown in the figures that show a filter, water retaining layer, and a water permeable layer. Therefore, the examiner maintains that the applicants would not have contemplated as part of their invention a fuel cell assembly that includes both a water permeable layer and a porous carbon filter as of the filing date of the present application.

Regarding the recitation of “a holder for holding peripheries of the water-retaining layer, water permeable layer, separator and unit cell”, page 9 of the specification

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describes a holder 206 for holding the water retaining layer 203 and Figure 5 shows a holder 206 that holds the periphery of the water retaining layer 203. Therefore, the holder does not hold the peripheries of the water permeable layer, separator, and unit cell. In addition, the wall 50 & 210 shown in Figure 5 is construed as a separator having a gas channel 205 facing the water retaining layer 203 on one face and facing the unit cell on the other face. Therefore, the separator 50 & 205 does not face a water permeable layer, instead it faces a water retaining layer. In addition, the holder 206 is not partitioned from a gas flow channel with a wall member because the wall member is not part of the holder.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 3 and 5-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claim 3 recites the limitation "said porous member" in line 3. There is insufficient antecedent basis for this limitation in the claim.

11. Claims 5-7 recites the limitation "said water permeable membrane" in lines 1 and 2. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

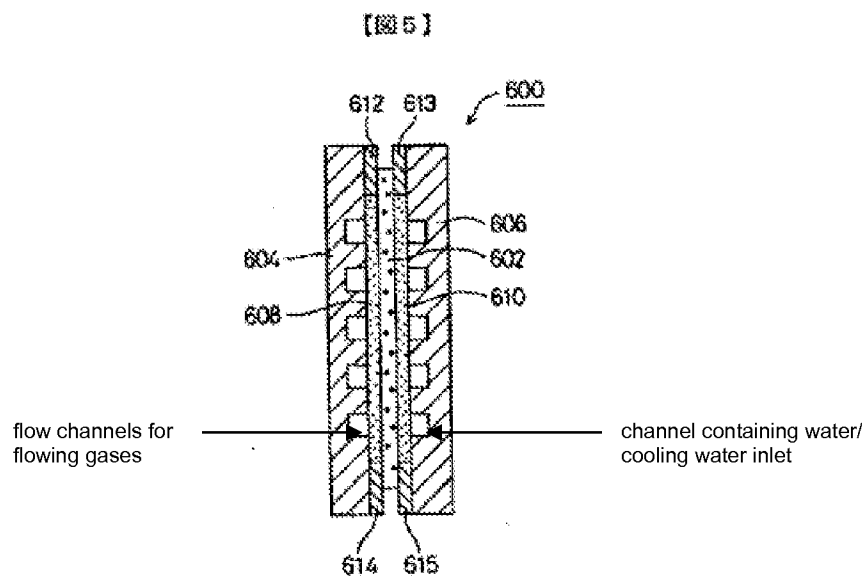
13. Claims 33, 40, and 46 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawazu (JP 08-138704).

Regarding claims 33 and 46, the Kawazu reference discloses a fuel cell assembly comprising: a humidifier “200” and a plurality of fuel cell units “10”, wherein each of the fuel cell units comprises an electrolyte membrane “11”, a cathode “12” adjacent to one face of the membrane, an anode “13” adjacent to the other face of the membrane, a gas diffusion layer adjacent to the cathode, a gas diffusion layer adjacent to the anode, a separator “14” having a flow channel for flowing oxidizing gas, which is adjacent to the cathode, and a separator “15” having a flow channel for flowing fuel gas, which is adjacent to the anode, wherein the humidifier comprises a porous membrane “602” (porous water-retaining layer) for retaining water supplied thereto, wherein the porous membrane “602” communicates with a channel containing water (not labeled) by way of a porous carbon (filter) “610” for passing water, but not gas, the channel containing water exclusively supplying water to the porous membrane, supplying water thereto via the filter, wherein the porous carbon (filter) is disposed at a position where the cooling water inlet and the porous membrane communicate with each other, and wherein the humidifier adjoins an end of the plurality of the fuel cell units in such as relation that the porous membrane faces the flow channels thereby to transfer water introduced into the porous membrane to the fuel gas and oxidizing gas flowing in the flow channels, the flow channels for flowing gases being partitioned with a wall “612”,



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“608”, “614” from the channel containing water (See paragraphs [0031],[0033],[0034],[0036],[0040], and Drawings 1, 3, and 5). It also discloses a porous membrane that is a hydrophilic polyolefin material (See paragraph [0037]). It also discloses a porous membrane “602” that takes water thereinto at a peripheral portion thereof, where the porous membrane is in contact with cooling water (See Drawing 5).



Regarding claim 40, it also discloses a fuel cell assembly that has a single humidification unit “200” (See Drawing 1).

### ***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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15. Claims 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawazu (JP 08-138704) in view of Kawazu (JP 08-138705). The Kawazu '704 reference is applied to claim 33 for reasons stated above.

However, Kawazu '704 does not expressly teach a water retaining layer that comprises a hydrogen oxidation catalyst dispersed in a porous member. The Kawazu '705 reference discloses a hydrogen oxidizing catalyst "22" that is dispersed on the porous film "21" of a humidifier for a fuel cell (See Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Kawazu/Yi fuel cell to include a porous member that has a hydrogen-oxidizing catalyst dispersed therein in order to prevent a drop in the power generating capability of the fuel cell by preventing a drop in humidifying function caused by hydrogen gas penetrating from a gas flow path side to a water flow path side through a porous film.

### ***Response to Arguments***

16. Applicant's arguments filed 4/17/09 have been fully considered but they are not persuasive.

The applicants argue that while the water permeable membrane 201 of Embodiment 1 "can be omitted" when using the porous carbon filter 501, such water permeable membrane 201 need not be omitted; and, accordingly, it is respectfully submitted that the description in Applicants' disclosure as a whole shows that Applicants contemplated as part of their invention a fuel cell assembly including both the water

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permeable layer and the porous carbonaceous filter, as of the filing date of the above-identified application. Accordingly, it is respectfully submitted that the description requirement of the first paragraph of 35 USC 112 has been satisfied.

In response, the examiner disagrees with this interpretation of the applicants' disclosure. It is clear from the specification and the drawings that when the porous carbon filter is included to control the flow rate of part of the cooling water from the cooling water flow channel to the water retaining layer 203, the water permeable membrane 201 is omitted as shown in Figure 5. Therefore, the 35 USC 112, 1<sup>st</sup> paragraph, written description rejection is maintained.

The applicants further argue on page 15 of the Remarks that the applied references would have neither disclosed nor would have suggested such a fuel cell assembly as in the present claims, having a plurality of fuel cell units and a humidifier, wherein the humidifier includes, inter alia, a porous water-retaining layer which is in communication with a channel containing water by way of a filter for passing water, but not gas, this channel containing water exclusively supplying water to the water-retaining layer, supplying water thereto via the filter. See claim 33.

In response, the examiner disagrees because the Kawazu '704 does disclose a porous membrane "602" (porous water-retaining layer) that is in communication with a channel containing water by way of a porous carbon (filter) for passing water, but not gas, this water channel exclusively supplying water to the porous membrane, supplying water thereto via the porous carbon (filter) (See Drawing 5 above).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571)272-0717. The examiner can normally be reached on M-F, 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

/Jonathan Crepeau/  
Primary Examiner, Art Unit 1795